

1. (Original) A method for recording a predefined multiple intensity level image on a substrate, the method comprising the steps of:
 - converting the predetermined image to multiple intensity level associated images;
 - converting a light beam to multiple light beam arrays;
 - modulating each light beam array to provide modulated light beam arrays, in response to a corresponding intensity level associated image to be recorded on the substrate;
 - directing each modulated light beam array to impinge on the substrate; and
 - repeating the steps of converting, modulating and directing while moving the substrate until the predefined image is imaged on the substrate.
2. (Original) The method of claim 1 further comprising a step of eliminating coherence between different modulated light beam arrays.
3. (Original) The method of claim 2 wherein the step of eliminating coherence comprising introducing time shifts between the modulation of different light beam arrays.
4. (Original) The method of claim 3 wherein the step of directing comprises compensating for movement of the substrate during these time shifts.
5. (Original) The method of claim 3 wherein the compensation comprises a retrograde scan.
6. (Original) The method of claim 1 wherein modulated light beam arrays differ by their light frequencies.
7. (Original) The method of claim 1 further comprising directing each modulated light beam array via at least one polarizing beam splitter.
8. (Original) The method of claim 1 further comprising a step of altering the polarization of at least one modulated light beam array during the step of directing to enable said the at least one modulated light beam array to reach the substrate.
9. (Original) The method of claim 1 wherein the intensity levels associated with intensity level associated image differ from each other by a factor of two.
10. (Original) The method of claim 1 further comprising altering an intensity of at least one modulated light beam array by polarization.

11. (Original) The method of claim 1 wherein the step of converting light beam to multiple light beam arrays comprises collimating a pulse of light beam and splitting the collimated light beam.
12. (Original) The method of claim 1 wherein the step of modulating each light beam array comprises directing the light beam array towards a reflective spatial modulator.
13. (Original) The method of claim 12 further comprising altering a polarization state of at least the light beam array or the modulated light beam array reflected from the reflective spatial modulator.
14. (Original) The method of claim 1, comprising focusing the modulated light beam arrays with an array of lenses after the modulating step.
15. (Original) The method of claim 1, comprising moving the substrate substantially linearly in a scanning direction that deviates from an axis of a modulated light beam array such that as the substrate is moved a distance substantially equal to a length of the array in the scanning direction, the modulated light beams trace a substantially continuous path on the substrate surface in a mechanical cross-scan direction.
16. (Original) The method of claim 1 wherein the step of moving comprises moving the substrate on a movable stage in a direction slanted relative to the axes of the beam array.
17. (Original) The method of claim 1 wherein the step of moving comprises moving the substrate such that a different continuous area of the substrate is illuminated during each iteration of the modulating and directing steps.
18. (Original) The method of claim 1, wherein each modulated light beam array corresponding to an intermediate intensity level associated pattern on the substrate, and the superposition of the intermediate patterns forms the predefined image on the substrate.
19. (Original) The method of claim 1 wherein the step of modulating each light beam array comprising focusing each light beam onto an element of a spatial light modulator.
20. (Original) The method of claim 1 further comprising a step of converting a light beam, out of the modulated light beam array, that is oriented in relation to a required optical axis to a light beam that is parallel to the required optical axis and focusing the converted light beam onto the substrate.

21. (Original) The method of claim 1 further comprising focusing a light beam array onto modulating elements, collecting a modulated light beam array, converting the modulated light beam array such as to comprise multiple parallel light beams that propagate along an optical path that is normal to focusing optics capable of focusing the modulated light beam array onto the substrate.

22. (Original) The method of claim 1 wherein the light beam is generated by a pulsed laser.

23. (Original) A method for recording a predefined multiple intensity level image on a substrate, the method comprising the steps of:

converting the predetermined image to multiple intensity level associated images;
converting a light beam to a sequence of time spaced multiple light beam arrays;
for each light beam array of the sequence, modulating the light beam to provide a modulated light beam arrays and directing the modulated light beam array to impinge on the substrate, whereas the modulation is responsive to an input signal corresponding to a corresponding intensity level associated image to be recorded on the substrate;

repeating the steps of converting, modulating and directing while moving the substrate until the predefined image is imaged on the substrate.

24. (Original) The method of claim 23 wherein the step of directing comprises compensating for movement of the substrate during the time spaces.

25. (Original) The method of claim 24 wherein the compensation comprises a retrograde scan.

26. (Original) The method of claim 23 further comprising directing each modulated light beam array via at least one polarizing beam splitter.

27. (Original) The method of claim 23 further comprising a step of altering the polarization of at least one modulated light beam array during the step of directing to enable said the at least one modulated intensity associated light beam array to reach the substrate.

28. (Original) The method of claim 23 wherein the intensity levels associated with intensity level associated image differ from each other by a factor of two.

29. (Original) The method of claim 23 further comprising altering an intensity of at least one modulated light beam array by polarization.

30. (Original) The method of claim 23 wherein the step of converting light beam to a sequence of time spaced comprises converting a light pulse to a sequence of light pulses that differ by their intensity level.

31. (Original) The method of claim 23 wherein the step of modulating each light beam array comprises directing the light beam array towards a reflective spatial modulator.

32. (Original) The method of claim 31 further comprising altering a polarization state of at least the light beam array or the modulated light beam array reflected from the reflective spatial modulator.

33. (Original) The method of claim 23 comprising focusing the modulated light beam arrays with an array of lenses after the modulating step.

34. (Original) The method of claim 23 comprising moving the substrate substantially linearly in a scanning direction that deviates from an axis of a modulated light beam array such that as the substrate is moved a distance substantially equal to a length of the array in the scanning direction, the modulated light beams trace a substantially continuous path on the substrate surface in a mechanical cross-scan direction.

34. (Original) The method of claim 23 wherein the step of moving comprises moving the substrate on a movable stage in a direction slanted relative to the axes of the beam array

35. (Original) The method of claim 23 wherein the step of moving comprises moving the substrate such that a different continuous area of the substrate is illuminated during each iteration of the modulating and directing steps.

36. (Original) The method of claim 23 wherein each modulated light array corresponding to an intermediate intensity level associated pattern on the substrate, and the superposition of the intermediate patterns forms the predefined image on the substrate.

37. (Original) The method of claim 23 wherein the step of modulating each light beam array comprising focusing each light beam onto an element of a spatial light modulator.

38. (Original) The method of claim 23 further comprising focusing a light beam array onto modulating elements, collecting a modulated light beam array, converting the modulated light beam array such as to comprise multiple parallel light beams that propagate along an optical path

that is normal to focusing optics capable of focusing the modulated light beam array onto the substrate.

39. (Original) The method of claim 1 further comprising a step of converting a light beam, out of the modulated light beam array, that is oriented in relation to a required optical axis to a light beam that is parallel to the required optical axis and focusing the converted light beam onto the substrate.

40. (Original) The method of claim 23 wherein the light beam is generated by a pulsed laser.

41. (Original) A printer for recording a predefined multiple intensity level image on a substrate, the printer comprising:

a programmable optical radiation source for providing multiple modulated light beam arrays and for directing the modulated light beam arrays to impinge on the substrate, each modulated light beam array being modulated in response to an input signal corresponding to a corresponding intensity level associated image to be recorded on the substrate; whereas a superposition of the intensity level associated images forms the predefined image on the substrate; and

a movable stage for moving the substrate until the predefined image is imaged on the substrate.

42. – 87. (Cancelled)